Bike Sport Developments Ltd – UK
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NEMESIS - TCS

Nemesis-TCS 'Traction Control System
Installation manual MV Agusta F4 1000

Kit part No.	**TCS-MV F4 1000.AA**
This application is designed for use with the MV Agusta F4 1000	

Speed pick up components	**Part No**	**Checked**	**Qty**
Front left fork leg speed bracket - 28.5mm spacing	CSD1379		1
Spacer - 12.8 x 11mm - 7.2ID	CSD1383		2
M8 x 20 low head zinc disk bolts (Ducati spec) Pt No. 7070 083 20	CSP1034		5
M8 Washer – plain washer	CSF1056		2
M7 x 45 s/s hex head screw	CSF1053		2
Speed sensor	23813030401		1
M6 x 16 Zinc Hex head cap screw - Speed sensor	CSP1019		1

Traction module components	**Part No**	**Checked**	**Qty**
Traction Control Module - 4c	CSP1048		1
TCS Mounting Plate - template for drilling	CSD1378		1
TCS Mounting Plate - assembled to TCS module (refer to dwg for orientation)	CSD1389		1
M4 Nyloc Nut	CSF1051		6
Bobbin - Dia 10 x 17, M4 female/female	CSP1046		2
Small bobbin - 10mm dia - 8mm long - M4 male/male	CSP1051		4
M4 x 8 SS button head allen screw	CSF1045		2
M4 flat washer	CSF1052		4
M4 spring washer	CSF1050		2
Spacer - 4mm bore - 8mm OD, 3mm long	CSP1044		2

Wiring	**Part No**	**Checked**	**Qty**
Module Wiring	CSW1377		1
Front Wiring	CSW1371		1
Throttle signal - quick link (red)	CSP1015		1

Display module components	**Part No**	**Checked**	**Qty**
Display module	TC-Pod		1
Spacer - 11mm Dia x 6.5	CS1258		1
M6 x 35 s/s cap head screw	CSP1016		1
Center bracket - TC-Pod	CS1243		1
M3 x 8 Hex button head	CSP1018		2
Push button assembly - blue/green TC-Pod	CS972		1
3M velcro - 25mm length	CSP1049		2

Miscelaneous components	**Part No**	**Checked**	**Qty**
Cable ties - 200mm x 4mm	CSP1021		10
Printed TCS over view manual			1
Printed TCS MV F4 1000 AA manual			1
Nemesis-TCS stickers	CSP1022		6

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Installation – 4C-MV F4 1000.AA (revision_01, 08/12/11)

Author – SImon Bateman

IMPORTANT – To be read by ALL installers and owners

Terms of use

The presence of the Nemesis-TCS does not take away the responsibility of the rider to operate the bike correctly within their own abilities, the track conditions and the laws of physics.

The system is designed to achieve greater on-track performance by the use of power modulation during wheel slip events, but in no way should it be considered possible for the system to recover from every conceivable loss of grip. The onus for safety always rests with the rider to stay within his or her own abilities, and to ensure that the 'on-bike' equipment is programmed, setup correctly, and an appropriate TC level selected for the skill of the rider, the bike and the track conditions.

This equipment is intended for racing or track day performance use only and where exhaust emission controls are not applicable.

By installing and using the Nemesis-TCS you automatically indemnify Competition Systems Ltd, our suppliers and our authorised dealers from all first party or third party loss or damages. Normal components warranty is not affected

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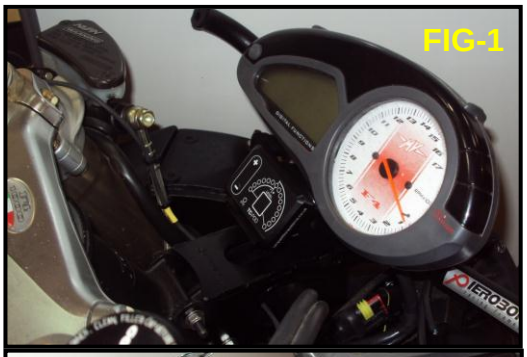
Preparation. Remove these parts from the bike.

- Left and right fairing panels
- Fuel tank
- Front mudguard and front wheel
- Seat unit

TC-Display pod Fitting:

- Mount the display pod to the top of the sub frame just in front of the dashboard. Use the angled bracket, M3 screws and Velcro. Route the wiring down and toward the right handlebar in front of the headstock. (The right side of the bike is as viewed from the riding position) **FIG-1**
- Mount the CS972 switch assembly to the clutch lever clamp using the longer bolt and spacer provided. Connect the CS972 switch assembly to the TC-Pod via the 4-way connector of the TC-Pod wiring. **FIG-2**
- Do not secure any wires in place at this stage, as there will be further wires added in this region.
- Important note – The TC-Pod supplied, as part of the TCS is not the same as the standard TC-Pod. Do not attempt to swap parts
- If installing a pit limiter switch, mount it on the right brake lever assembly.



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Front Wheel Speed:
Your TCS kit comes with a dedicated bracket, sensor, spacers and different disc cap-head bolts.

- Remove the 5 bolts that secure the left brake disk in place and replace with the 5 new low head cap bolts. Fit to the manufacturer recommended torque and thread lock agent. **Under no circumstances should any alternative bolts be used.**
- Remove the two M7 spindle clamp bolts from the left fork and retain for future use. Slide an M8 washer over each of the new M7 bolts supplied and use these to mount the front speed sensor bracket as shown in **FIG-3**, ensuring the two spacers fit between the bracket and the rebates in the clamp assembly. Do not tighten at this stage.
- Remove the rubber O ring from the sensor body and fit into the rebate of the sensor bracket.
- Apply a small amount of grease to the sensor body and push the sensor into the bracket. Lock in place using one of the M6x16 cap head screws.
- Ensure all screws are secure **This is a safety critical component and could result in wheel locking or TCS failure if it were to come loose.**
- **Check the gap between the sensor face and the surface of one of the new disc bolts, set to 1mm to 1.5mm** and now tighten the two M7 bolts to the manufacturers recommended torque.
- The sensor maximum range is approx 4mm for smaller targets and 6mm for larger targets, therefore no other ferrous objects should be installed anywhere near this sensor

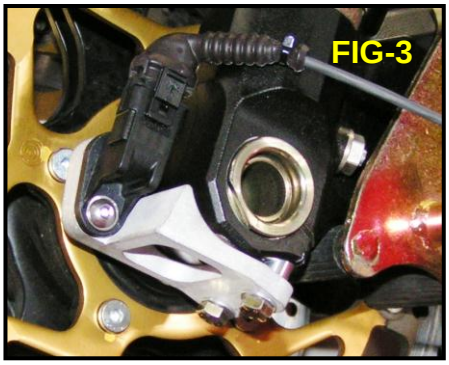
FIG-3

IMPORTANT – Care should be taken when using paddock stands not to damage the wiring of the front speed sensor.

Wiring – Stage 1
The wiring provided in this kit comes in 2 parts to simplify the installation and enable crash damaged parts to be replaced without a major strip down.

FIG-4

Wiring – Ignition coils
Locate the plate on which the coil connectors are mounted, remove the top bolt that holds this to the frame and tilt it back to improve access. **FIG-4**

(Note the cylinder numbers are marked on the sleeving of the engine loom and that the corresponding coil cables can easily be traced to the cylinder head, cylinder 1 being on the left)

Disconnect cylinder 1 from the plate, then starting with the main loom section 1 (shown in the schematic on the following page) connect A from the TCS loom to the plate connector and E to the coil. Repeat for cylinders 2-4, routing the coil leads to the right rear side of the engine as shown in **FIG-5**.

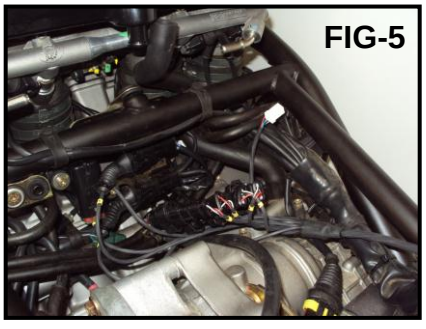
FIG-5

IMPORTANT – It is vitally important that the coil inputs and outputs are connected correctly or the bike may not start on all cylinders, or may even damage the engine.

Wiring – Rear speed
Locate the rear speed sensor connector in front of the gear selector. Route connections **K** and **L** across the back of the engine, behind the water pump and alongside the original wiring to bridge the junction between the original speed sensor connectors. **FIG-6**

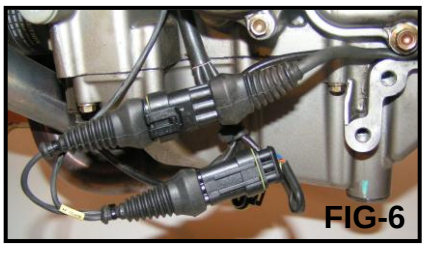
FIG-6

This rear speed signal is shared between the TCS module and the dashboard/ECU as well as providing a switched power supply to the whole system.

Take care to use the speed sensor connector (which continues into the gearbox sprocket casing) and NOT the side stand connector.

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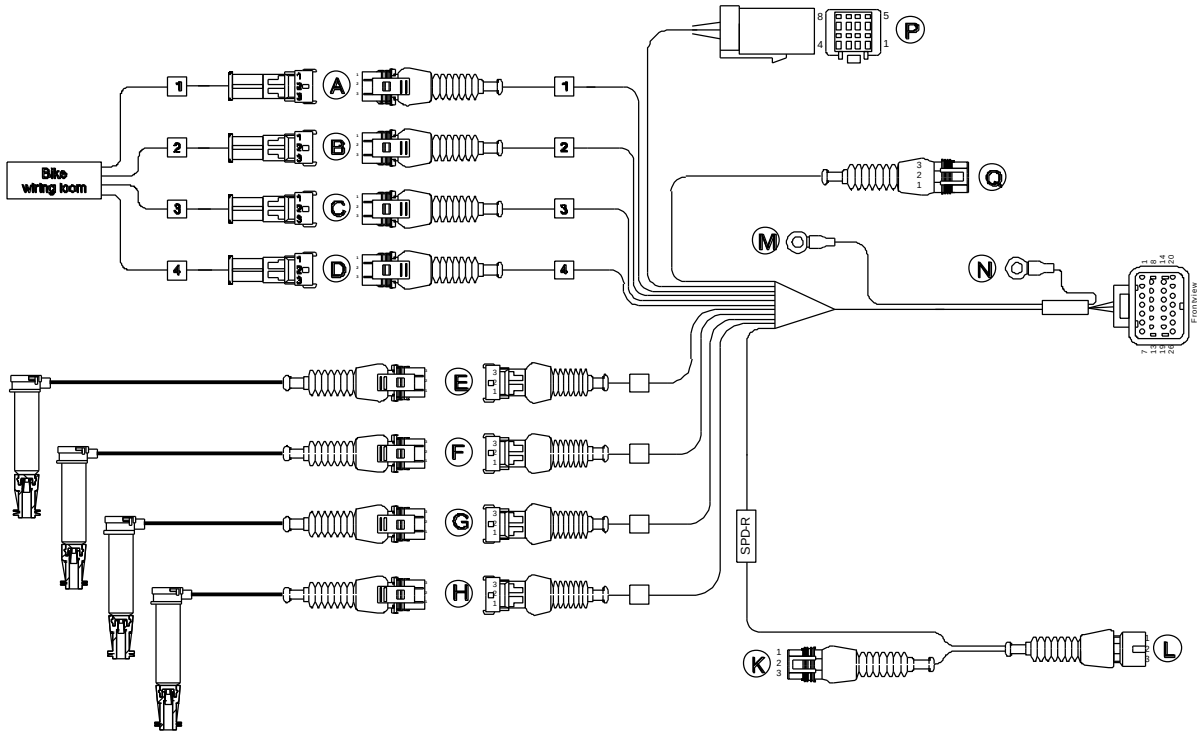
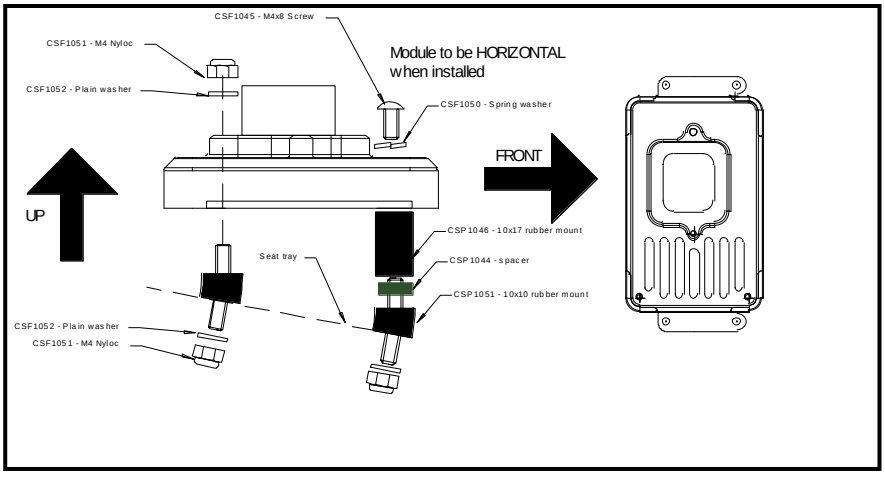


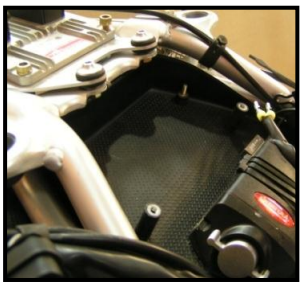
Wiring - TCS Module

Using the TCS module base template supplied, mark its mounting position on the rear subframe undertray, in front of the ECU so that the TCS module will fit in the orientation shown in **FIG-7**. Ensure the module is parallel with the sub frame cross-member and as far back as possible to avoid fouling the seat. Drill 4 x 4.5mm holes through the under tray at your marked locations (you may have to loosen or remove the rear exhausts for this operation).

FIG-7

Using M4 Nyloc nuts and flat washers on the underside, secure the short mounting bobbins to the rear holes and the longer items to the front as shown in **FIG-8** (it may be helpful to use grips to secure the rubber components whilst tightening the fasteners under the tray). The TCS module can now be secured to the short rear bobbins with M4 Nyloc nuts and spring washers, and to the front with M4x8 screws, spring washers and spacers, taking note of the orientation in **Fig-7** and the drawing below





Route the remainder of the main wiring loom rearwards along the right side of the bike, parallel to the original loom, along the side of the battery to the TCS module. It is vitally important that the small ground wire with the 4mm eye (**N**) be connected securely to the M4 stud as **circled** in **FIG-7** using the M4 Nyloc nut. Without this the module or coils could be damaged as well as TCS not functioning correctly.

IMPORTANT – Failure to fit the ground securely can lead to misfire / engine not starting / TCS module damage. This is the main power ground for the coil system.

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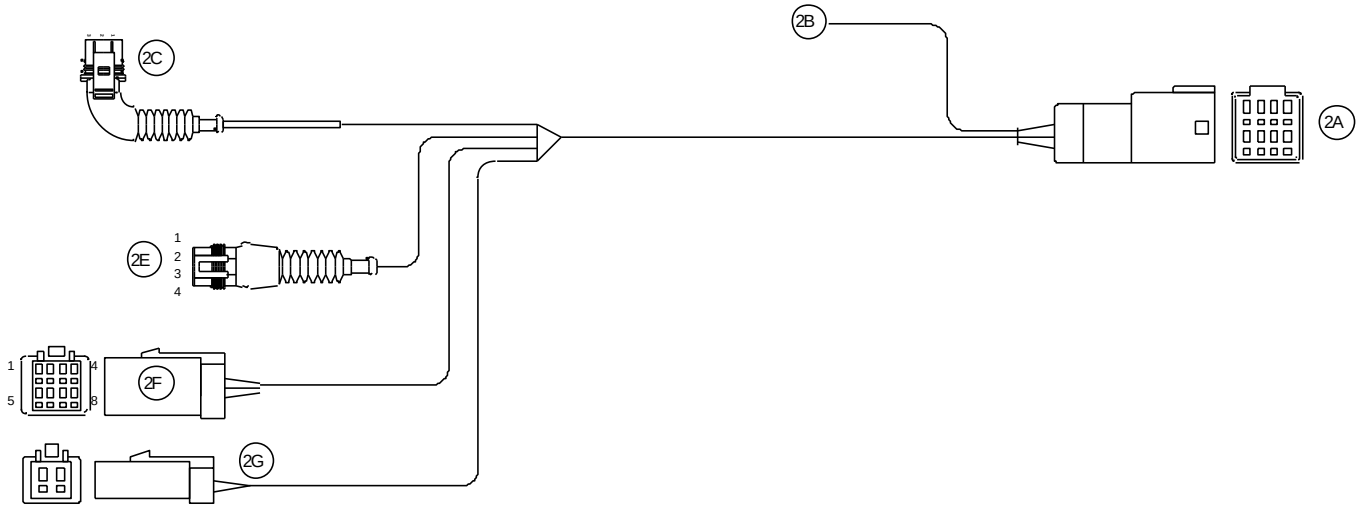
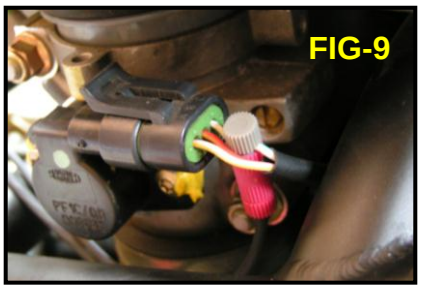
Wiring – Battery ground

This vital connection **M** must be connected directly to the battery negative connector, not to the engine block or any other ground source. Route the wiring directly along the left side of the sub frame and secure using cable ties.

Wiring, Front section 2 - Schematic

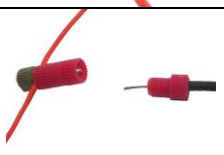
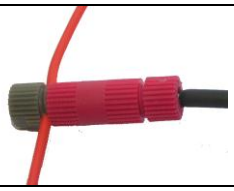


Starting below the dashboard, feed connector 2A between the right fork leg and headstock, under the right air scoop and inside the trellis frame to join connector **P** on the main harness behind the engine.



Wiring / Front - Throttle

The throttle input is the single wire 2B of this loom. This needs to be attached to the white/green signal wire (pin C) of the standard bike throttle position connector using the red quick link provided in the kit, as shown in the steps below and in **FIG-9** to the right.

The quick link is made up of three parts as seen here on the right:	
Using the green section with the slot, push it over the orange throttle signal wire of the bike loom until the wire rests at the bottom of the slot:	
The large red centre section must be fitted the correct way around or the link will not work. Locate the end with the sharp pointed tip protruding from the end of the outer body and screw this end onto the green section until it rests firmly against the wire. The sharp tip will pierce the outer sleeve but not sever the inner core of the wire:	
Strip back the sleeve of the throttle input wire on the TCS loom CSW1278 so that 8mm of inner metal core is exposed. Push this into the red cap as seen here on the right with inner core showing:	
Screw this cap and wire into the main body ensuring that metal inner core and wire cores are sandwiched and held securely. Shrink sleeving can be put over this quick link if required.	

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Wiring - Quick shifter
Connector Q should be secured using cable ties if not in use. For more information on quick shifter connections please refer to the 'System manual'

Wiring / Front – TC-Pod display
Connect the front wiring loom to the TC-Pod display via the 8 way connector **2F**

Wiring / Front – front wheel speed
Route the front speed wiring **2C** across the front of the bike and following the same route as the brake line to the left calliper, connect it to the front speed sensor. The wiring for sensor must be routed taking all of the following into consideration.

- Movement of forks
- Rotation of the steering
- Positioning of paddock stands

Wiring / Front – PC connector
The 4 way PC connector should remain accessible but securely cable tied to the existing harness.

Wiring / Front – Pit limiter switch
The 2 way pit limiter switch connector can be cable tied out of the way if not needed or plugged into to the dedicated red switch assembly CSP1041.

When all wiring connections have been made and movement has been checked, carry out the following:

- Cable tie all wiring into position
- Re-fit the throttle body and air box
- Re-fit the front wheel assembly and mudguard
- Re-fit the battery mount and battery (remember the new TCS ground also)
- Re-fit fuel tank and fairing
- Program your TCS with an appropriate map and test all inputs
    - Throttle
    - Front speed
    - Rear speed
    - Position value
    - Push button switches
    - Pit limiter if fitted
    - Quick shifter if fitted

PC Setup
Your TCS module should be loaded with the following bike :

BIKE - MV F41000.BIKE
TYRE – To suit your installation
CONFIG - TCS_4C_Base_35_02.CONFIG

Default rear sprockets for maps are: 15/40
Gear box teeth - 8

Status **Position** offset value –
Stronger - **0.21 to 0.32** – Refer to **WinTC View Data**
Normal - **0.32 to 0.37** – Refer to **WinTC View Data**
Weaker - **0.37 to 0.47** – Refer to **WinTC View Data**

Note : The WinTC installation guide can be found in the manual - Win-TC 4C manual_v2.05_a.pdf

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